

## CLAIMS

- 1 1. A computer system for protecting electronic documents, comprising:  
2 a repository for storing an electronic document having a document attribute;  
3 an access layer used by an accessor to access at least one portion of the electronic  
4 document, the accessor having an accessor attribute;  
5 a rule set; and  
6 an expert system operable to determine an access behavior with regards to the at least  
7 one portion by evaluating rules of the rule set with reference at least to the document attribute  
8 and the accessor attribute when the accessor tries to access the at least one portion using the  
9 access layer.
- 1 2. The computer system of claim 1, where the rule set is stored in a knowledge base and the  
2 access behavior is defined in the knowledge base.
- 1 3. The computer system of claim 1, where the expert system returns the access behavior to  
2 the access layer to control the access of the accessor.
- 1 4. The computer system of claim 1, where the rule set has a rule that uses the accessor  
2 attribute and the document attribute to assert a condition on the basis of a value of the  
3 accessor attribute and a value of the document attribute.
- 1 5. The computer system of claim 1, where the access layer learns about the document  
2 attribute of the document by using a generic interface.
- 1 6. The computer system of claim 5, where the expert system retrieves structure meta data of  
2 the document that describes the structure of the document.
- 1 7. The computer system of claim 6, where the structure meta data indicates that the at least  
2 one portion is an inner sub-portion of an outer portion of the document and the access layer  
3 allows the accessor to access the inner sub-portion but prevents the accessor from accessing  
4 the outer portion.

1 8. The computer system of claim 6, where the structure meta data has at least one structure  
2 element that is associated with a key that influences the access behavior for the at least one  
3 structure element.

1 9. The computer system of claim 1, where a framework generates a runtime representation  
2 of the document that references the document and reflects the access behavior with respect to  
3 the accessor.

1 10. The computer system of claim 1, where at least one of:

2 the document attribute comprises at least one of document type, document structure  
3 information, document meta data, document relationship information, and document access  
4 behavior;

5 the accessor attribute comprises at least one of user role, user group, process type, and  
6 application type;

7 the access behavior comprises at least one of hidden, protected, read, modify, delete,  
8 create, print, copy, transport, archive, and custom access behavior; and

9 the accessor comprises at least one of user, application, and process.

1 11. The computer system of claim 1, where a change of the rule set affects substantially  
2 simultaneously the access behavior to the at least one portion without the need to change the  
3 document or the accessor.

1 12. A method for controlling access to electronic documents, comprising:

2 receiving a request of an accessor to access at least one portion of an electronic  
3 document stored in a repository, with the electronic document having a document attribute  
4 and the accessor having an accessor attribute;

5 requesting authorization information from an expert system with regards to the  
6 authorization of the accessor to the at least one portion;

7 receiving from the expert system the authorization information including an access  
8 behavior with regards to the at least one portion, where the access behavior is determined by  
9 applying rules of a rule set to data comprising at least the document attribute and the accessor  
10 attribute; and

11 granting the accessor access to the at least one portion according to the access  
12 behavior.

1 13. The method of claim 12, where the access behavior is defined in a knowledge base and  
2 the rule set is stored in the knowledge base.

1 14. The method of claim 12, where the rule set has a rule that uses the accessor attribute and  
2 the document attribute to assert a condition on the basis of a value of the accessor attribute  
3 and a value of the document attribute.

1 15. The method of claim 12, further comprising:

2 generating a runtime representation of the document that references the document and  
3 reflects the access behavior with respect to the accessor.

1 16. The method of claim 15, further comprising:

2 receiving an event from at least one of the document and the runtime representation,  
3 where the event is triggered by a change of the document;

4 causing the expert system to determine an updated access behavior in accordance  
5 with the change; and

6 notifying at least one of the document and the runtime representation about the  
7 updated access behavior.

1 17. The method of claim 12, further comprising:  
2 retrieving structure meta data of the document that describes the structure of the  
3 document.

1 18. The method of claim 17, where the structure meta data indicates that the at least one  
2 portion is an inner sub-portion of an outer portion of the document, and where the granting  
3 the accessor access further comprises:  
4 allowing the accessor to access the inner sub-portion; and  
5 preventing the accessor from accessing the outer portion.

1 19. The method of claim 12, where the access behavior comprises at least one of hidden,  
2 protected, read, modify, delete, create, print, copy, transport, archive, and custom access  
3 behavior.

1 20. The method of claim 12, further comprising:  
2 changing the rule set and affecting substantially simultaneously the access behavior to  
3 the at least one portion without the need to change the document or the accessor.

1 21. A computer program product, tangibly embodied on an information carrier, comprising  
2 instructions operable to cause data processing apparatus to:  
3 receive a request of an accessor to access at least one portion of an electronic  
4 document stored in a repository, with the electronic document having a document attribute  
5 and the accessor having an accessor attribute;  
6 request authorization information from an expert system with regards to the  
7 authorization of the accessor to the at least one portion;  
8 receive from the expert system the authorization information including an access  
9 behavior with regards to the at least one portion, where the access behavior is determined by  
10 applying rules of a rule set to data comprising at least the document attribute and the accessor  
11 attribute; and  
12 grant the accessor access to the at least one portion according to the access behavior.

1 22. The product of claim 21, where access to the at least one portion of the electronic  
2 document is provided only through an access layer comprising the instructions to receive a  
3 request, request authorization, receive from the expert system authorization information, and  
4 grant the accessor access.

1 23. The product of claim 21, where the access behavior is defined in a knowledge base and  
2 the rule set is stored in the knowledge base.

1 24. The product of claim 21, where the rule set has a rule that uses the accessor attribute and  
2 the document attribute to assert a condition on the basis of a value of the accessor attribute  
3 and a value of the document attribute.

1 25. The product of claim 21, further comprising instructions to:  
2 generate a runtime representation of the document that references the document and  
3 reflects the access behavior with respect to the accessor.

1 26. The product of claim 25, further comprising instructions to:

2 receive an event from at least one of the document and the runtime representation,  
3 where the event is triggered by a change of the document;

4 cause the expert system to determine an updated access behavior in accordance with  
5 the change; and

6 notify at least one of the document and the runtime representation about the updated  
7 access behavior.

1 27. The product of claim 21, further comprising instructions to:

2 retrieve structure meta data of the document that describes the structure of the  
3 document.

1 28. The product of claim 27, where the structure meta data indicates that the at least one  
2 portion is an inner sub-portion of an outer portion of the document, and where the granting  
3 the accessor access further comprises:

4 allowing the accessor to access the inner sub-portion; and

5 preventing the accessor from accessing the outer portion.

1 29. The product of claim 21, where the access behavior comprises at least one of hidden,  
2 protected, read, modify, delete, create, print, copy, transport, archive, and custom access  
3 behavior.

1 30. The product of claim 21, further comprising instructions to:

2 change the rule set and affecting substantially simultaneously the access behavior to  
3 the at least one portion without the need to change the document or the accessor.